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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY-DOCKET NO.	CONFIRMATION NO.
09/720,736	12/29/2000	Migaku Takahashi	OSP-10239	4239
466	7590	11/07/2003	EXAMINER	
YOUNG & THOMPSON			UHLIR, NIKOLAS J	
745 SOUTH 23RD STREET 2ND FLOOR			ART UNIT	
ARLINGTON, VA 22202			PAPER NUMBER	

1773

DATE MAILED: 11/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

ch 12

Office Action Summary

Application No.

09/720,736

Applicant(s)

TAKAHASHI ET AL.

Examiner

Nikolas J. Uhler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-15 and 25-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-15, and 25-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

1. This office action is in response to the amendment/arguments filed 10/14/03. The applicant's amendments to claims 5 and 6 are sufficient to overcome the prior applied 35 U.S.C 112 rejections. Thus, the 112 rejections of these claims are hereby withdrawn. The examiner notes that claims 16-24 have been canceled by this amendment, leaving claims 1-3, 5-15, and 25-41 pending. Applicant's arguments and amendments with respect to the pending claims have been considered but are not persuasive. A complete rebuttal of the applicant's arguments can be found below in the section entitled "response to arguments."

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 1-3, 5, 11-13, 15, and 35-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Takahashi et al. (JP11-186033).
4. This rejection is maintained as set forth in the office action dated 7/14/03 (paper #10).

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
6. Claims 1-3, 5, 7-8, 15, 25-29, and 34-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (US4858049) in view of Takahashi et al. (JP11-186033).

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7. This rejection is maintained as set forth in the office action dated 7/14/03 (paper #10).
8. Claims 6 and 39-41 rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi as modified by Takahashi as set forth above for claim 1, further in view of Carey et al. (US6542341).
9. This rejection is maintained as set forth in the office action dated 7/14/03 (paper #10).
10. Claims 9, 11-12 and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi in view of Takahashi as set forth above for claim 1, further in view of Hori et al. (US5006395).
11. This rejection is maintained as set forth in the office action dated 7/14/03 (paper #10).
12. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi as modified by Takahashi as applied to claim 1 above, and further in view of Hori et al. (US5068147).
13. This rejection is maintained as set forth in the office action dated 7/14/03 (paper #10).
14. Claims 1, and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reed (WO93/12928) in view of Tanaka et al. (US5854727), Kobayashi, Takahashi, and The Wiley Encyclopedia of Electrical and Electronics Engineering.
15. This rejection is maintained as set forth in the office action dated 7/14/03 (paper #10).

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16. Claims 1 and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. (US5854727), in view of Kobayashi and Takahashi and the Wiley Encyclopedia of Electrical and Electronics Engineering.

17. This rejection is maintained as set forth in the office action dated 7/14/03 (paper #10).

Response to Arguments

18. Applicant's arguments filed 10/14/03 have been fully considered but they are not persuasive. With respect to the 102(b) rejection of claims 1-3, 5, 7-8, 15, 25-29, and 34-38 as anticipated by Kobayashi, the applicant made the following argument (summarized):

- Reconsideration and withdrawal is requested of the rejection because the reference does not disclose or suggest an iron carbide film having a BCT structure wherein a c-axis constitutes a hard axis of magnetization and a c-plane constitutes a plane of easy magnetization as required by claim 1. The specification provides that the c-plane constitute a plane of easy magnetization. The assertion by the examiner that the 102(b) rejected claims are met by an FeC film having an easy axis of magnetization is not supported by the state of the art. One of ordinary skill in the art would recognize an axis as perpendicular to the film surface or the (001) direction. Furthermore claim 1 also provides that there is no easy direction of magnetization on the c-axis by the specific recitation that a c-axis constitutes an axis of hard magnetization. Furthermore, the prior art of Takahashi teaches an FeC film which has high coercive force, whereas the instant invention is directed towards a FeC having low coercive force, and high saturation magnetization.

19. This argument is not persuasive. With respect to the applicant's argument that one of ordinary skill in the art of magnetic materials would recognize that a reference to the c-axis would be recognized as perpendicular to the film surface or the <001> direction. In most instances, the examiner would readily agree with the applicant, as the c-axis and c-plane of a magnetic film are generally recognized to be perpendicular and parallel with the surface of the film respectively. However, in this instance, the applicant in claim 1 refers to "a" c-axis constituting a direction of hard magnetization and "a" c-

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plane constituting a direction of easy magnetization. No reference as to the directions of the c-axis or c-plane is provided in claim 1, or in any of the other 102(b) rejected claims. It is particularly pointed out that in claim 6 (which is not rejected under 102(b)), the applicant defines the directions of "said axis of hard magnetization" as being perpendicular to the film surface and "said plane of easy magnetization" as being horizontal to the film surface. The question that arises from reading claims 1 and 6 is that if the direction of the c-axis and c-plane of the film required by claim 1 and the subsequent 102(b) rejected claims is already defined by the mere recitation of "a" c-axis and "a" c-plane, why are these directions defined in a later dependent claim? Thus, one of ordinary skill in the art of magnetic films, having read the language of claims 1 and 6, would **not** interpret the language of claim 1 to limit the direction of the required "a" c-axis and "a" c-plane to be limited to the directions conventionally assigned to these terms in the art. Rather, one of ordinary skill in the art reading claims 1 and 6 together would be prudent to give the claims that are not dependent on claim 6 (or a similar claim which specifies the direction of the c-plane or c-axis) their broadest reasonable interpretation, namely that the c-axis and c-plane can lie in any direction. Thus, the examiner maintains that the FeC film of Takahashi anticipates the 102(b) rejected claims.

20. Regarding the applicant's argument that the coercive force of the FeC film of Takahashi is not the same as that of the FeC film of the instant invention. The examiner respectfully notes that the 102(b) rejected claims do not contain any property limitations with respect to coercive force. Thus, this argument is moot.

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21. With respect to the 103(a) rejection of claims 1-3, 5, 7-8, 15, 25-29, and 34-38 as being unpatentable over Kobayashi et al. (US4858049) in view of Takahashi et al.

(JP11-186033), the applicant made the following argument (summarized):

- The FeC film taught by Kobayashi does not teach that it has a BCT crystal structure. Rather, Kobayashi teaches that the FeC film of its invention is more or less amorphous as compared to that of FeC films of the prior art. Thus, the FeC film of Kobayashi is amorphous, not a magnetic film which has a BCT crystal structure. The office action does not set forth why one of ordinary skill in the art would combine the teachings of Takahashi, which teaches a BCT FeC film with the teachings of Kobayashi, which teaches an amorphous FeC film. Further the films of Takahashi have a high coercive force, whereas that of Kobayashi has a low coercive force. The MPEP states that if a proposed modification would render a piece of prior art incapable of performing its intended purpose, then there is no suggestion or motivation to make the modification.

22. This argument is not persuasive. The examiner acknowledges that Kobayashi teaches a film that is "more or less" amorphous as compared to that of convention FeC films. However, the film of Kobayashi is clearly **not** completely amorphous, as Kobayashi explicitly teaches that the film contains crystallites. Regarding the combination of Kobayashi with Takahashi, the examiner never proposed that one of ordinary skill in the art would be motivated to modify the teachings of Kobayashi per the teachings of Takahashi. The examiner merely noted that the process utilized to form the FeC film of Kobayashi was very similar to that of Takahashi. As the Takahashi process forms crystals having a BCT structure, the examiner took the position that the film of Kobayashi would have a BCT crystal structure due to the similarity in the methods of the two references. Though Kobayashi does teach that it is "more" amorphous than conventional FeC films, it contains crystallites. The position of the examiner in the prior office action was that at least those crystallites would have a BCT structure as a result of the similarity between the methods utilized by the two references. The examiner agrees that one of ordinary skill in the art, looking at the properties of the Kobayashi film

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and the Takahashi film would not have been motivated to modify either reference per the teachings of the other reference. However, the examiner never proposed such a modification. Thus, this argument is not persuasive.

23. Regarding the 103(a) rejection of claims 6 and 39-41 as being unpatentable over Kobayashi as modified by Takahashi as set forth above for claim 1, further in view of Carey et al. (US6542341), applicant made the following argument (summarized):

- Carey is cited for the teaching that magnetic films used in magnetic heads should have their magnetization oriented longitudinally as set forth in column 4, lines 1-7 of Carey. However, the Carey reference is directed to magnetic sensors such as spin valves. The magnetic sensor of Carey does not correspond to a magnetic thin film reproducing head as seen in figure 17 of the present invention. Thus, Carey is directed to different subject matter than the instant invention and one of ordinary skill would not combine Carey with the cited references. Further, the office action asserts that at column 4, lines 1-7 of Carey there is a statement reading: "The direction of magnetization of the main magnetic pole of a head is in the same direction as the direction of the magnetization of the medium." This statement is irrelevant, as shown by figures 13 and 17 of the instant specification. Figures 13 and 17 disclose an FeC magnetic film wherein the direction of magnetization is oriented with the plane of each member of on which the magnetic film is applied, which the direction of the magnetization of the magnetic film is vertical to the medium plane. The FeC film is not used differently as a result of the direction of magnetization of the medium. Tanaka further substantiates this argument, as figure 4 of Tanaka shows a recording head similar to that of figure 13 of the instant invention. Upper magnetic pole 55 of figure 13 corresponds to element component 511a of Tanaka. In the case of a horizontal media, the direction of magnetization of element 2b is horizontally. Thus, "the direction of magnetization of the main magnetic pole of the inplane (longitudinal) magnetic recording medium is not horizontal just as the direction of magnetization of the recording medium but is in a vertical direction and is vertical to the film plane."

24. This argument is not persuasive. With respect to the relevancy of Carey to the other cited prior art. Given that Kobayashi is directed towards the formation of a magnetic head and the fact that Carey discusses desirable features of magnetic heads, these references are not non-analogous art. One of ordinary skill in the art would have been motivated with a reasonable expectation of success in modifying Kobayashi per the teachings of Carey.

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25. Regarding the applicant's arguments that figures 13 and 17 of the instant invention establish that a magnetic film in a recording head can still have a horizontal magnetization and be utilized to record on vertical media. The examiner wholeheartedly agrees that horizontal oriented films can be utilized to read data from vertical media, so long as the orientation of the magnetization of the film utilized in the magnetic head is oriented in the same direction as that of the media. The head structures cited by the applicant all have the edge of the magnetic film oriented such that it faces the surface of the perpendicular media. Thus, as the magnetic film of the head has horizontal magnetization magnetic film of the media has perpendicular magnetization, the orientation of the head and media films are aligned. However, the examiner never made the argument that films having horizontal magnetization could not be utilized to record on perpendicular media. The examiner made the argument that the orientation of the magnetization of a magnetic head should be oriented in the same direction as that of the recording medium. Thus, to record on a **longitudinal media**, one of ordinary skill in the art would have been motivated to utilize a magnetic film that has its magnetization, oriented horizontal to the surface of the magnetic media. The examiner respectfully notes that all of the head structures relied on by the applicant are for recording on **perpendicular media**, not **longitudinal media**. The applicant has not shown any head structures which are disclosed to be suitable for reading longitudinal media. Thus, this argument is not persuasive. Furthermore, as the structure of the magnetic head is not required by the instant claims, applicant's arguments with respect to limitations relating to the structure of the magnetic head are moot.

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26. The remaining arguments depend from the arguments already addressed and thus are not persuasive for the reasons set forth above.

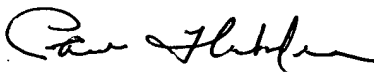
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nikolas J. Uhler whose telephone number is 703-305-0179. The examiner can normally be reached on Mon-Fri 7:30 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on 703-308-2367. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0389.

RJY
nju


Paul Thibodeau
Supervisory Patent Examiner
Technology Center 1700